

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P322982

Luminaire Tested: **GLEON-SA8D-760-U-T4W-HSS**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P322982  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-19)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA8D-760-U-T4W-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(8) 70 CRI, 5700K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 45070 lumens  
Efficiency: N/A  
Efficacy: 88.2 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

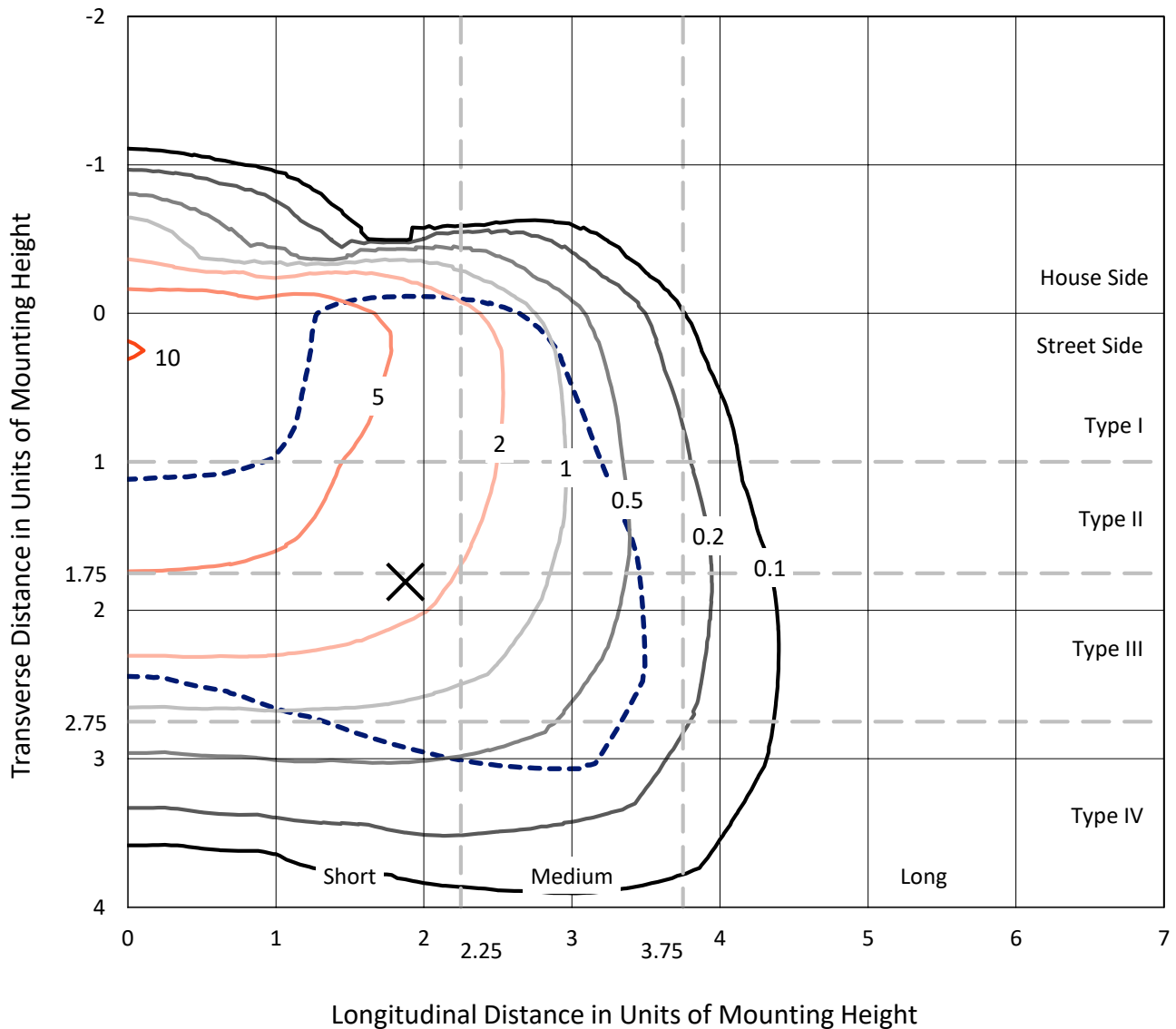
Input Watts (W): 511  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

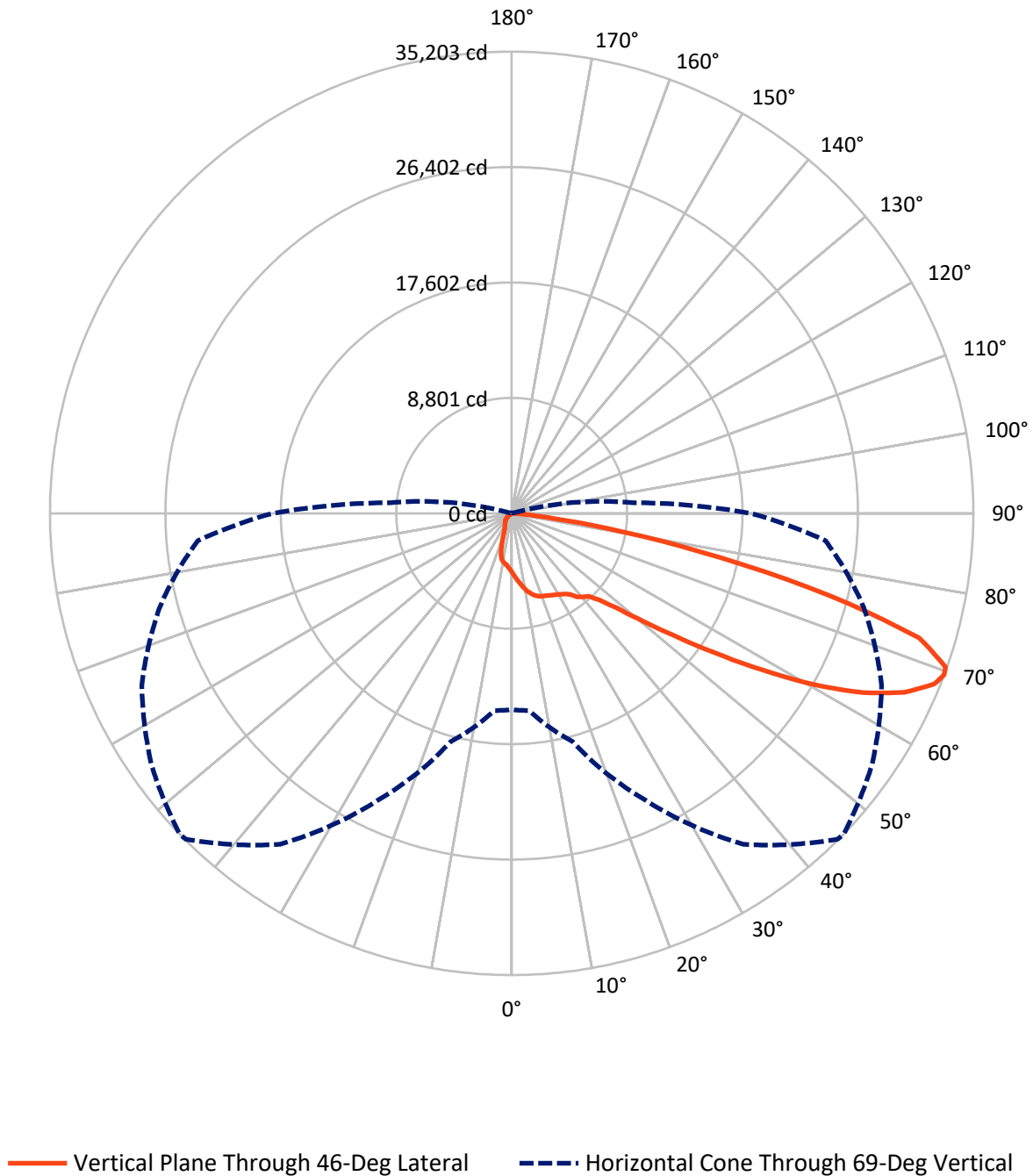
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.5 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4625.4   | 0.0    | 4625.4  |
|                    | % Fixture | 10.3     | 0.0    | 10.3    |
| <b>Street Side</b> | Lumens    | 40444.6  | 0.0    | 40444.6 |
|                    | % Fixture | 89.7     | 0.0    | 89.7    |
| <b>Total</b>       | Lumens    | 45070.0  | 0.0    | 45070.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 449.5   | 1.0       |
| 10°-20°   | 1363.6  | 3.0       |
| 20°-30°   | 2144.5  | 4.8       |
| 30°-40°   | 3075.3  | 6.8       |
| 40°-50°   | 5315.2  | 11.8      |
| 50°-60°   | 10500.7 | 23.3      |
| 60°-70°   | 14675.6 | 32.6      |
| 70°-80°   | 7089.9  | 15.7      |
| 80°-90°   | 455.7   | 1.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 45070.0 | 100.0     |
| 0°-180°   | 45070.0 | 100.0     |

**Coefficient of Utilization**



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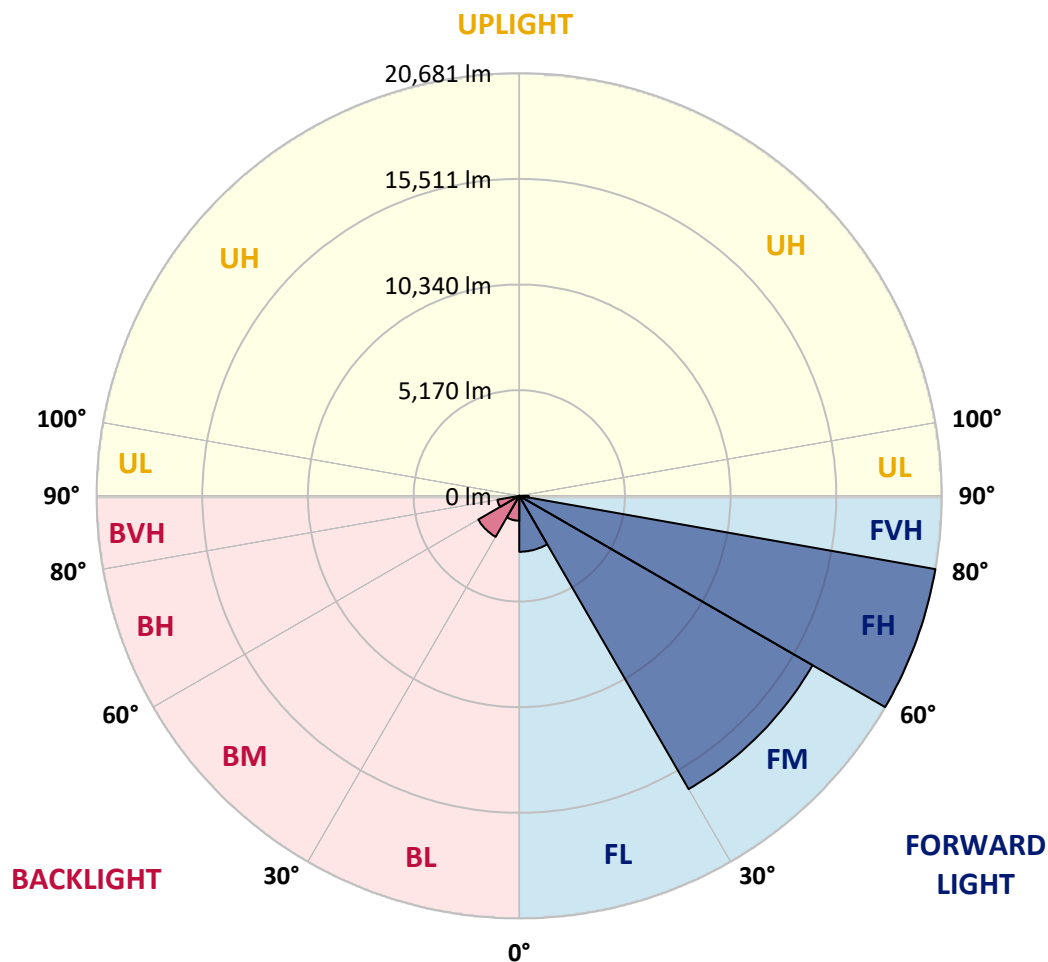
CATALOG NUMBER: GLEON-SA8D-760-U-T4W-HSS

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2738.5  | 6.1       |                         |      |         |
| FM   | (30°-60°)   | 16573.2 | 36.8      |                         |      |         |
| FH   | (60°-80°)   | 20681.0 | 45.9      |                         |      | G5      |
| FVH  | (80°-90°)   | 451.9   | 1.0       |                         |      | G3/500  |
| BL   | (0°-30°)    | 1219.1  | 2.7       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2317.9  | 5.1       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1084.6  | 2.4       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 3.8     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 46°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  | 4515.8  |
| 2.5°  | 5016.7  | 5010.3  | 4980.7  | 4968.1  | 4896.2  | 4854.0  | 4837.0  | 4784.2  | 4708.1  | 4632.1  | 4547.5  |
| 5°    | 5587.2  | 5585.1  | 5530.2  | 5477.3  | 5342.1  | 5215.3  | 5192.1  | 5069.5  | 4898.3  | 4737.7  | 4577.1  |
| 7.5°  | 6170.5  | 6143.0  | 6088.0  | 5986.6  | 5790.1  | 5587.2  | 5568.2  | 5394.9  | 5151.9  | 4919.5  | 4689.1  |
| 10°   | 6664.9  | 6648.0  | 6576.2  | 6421.9  | 6191.6  | 5961.3  | 5938.0  | 5724.6  | 5449.9  | 5164.6  | 4870.9  |
| 12.5° | 7049.5  | 7036.9  | 6941.8  | 6749.5  | 6504.3  | 6265.6  | 6233.9  | 6043.7  | 5749.9  | 5430.8  | 5084.3  |
| 15°   | 7284.1  | 7277.8  | 7161.5  | 6956.6  | 6715.7  | 6508.6  | 6481.1  | 6314.2  | 6041.6  | 5707.7  | 5316.7  |
| 17.5° | 7339.0  | 7341.2  | 7220.7  | 7013.6  | 6815.0  | 6667.1  | 6645.9  | 6519.1  | 6290.9  | 5959.1  | 5549.2  |
| 20°   | 7216.5  | 7241.8  | 7134.1  | 6954.4  | 6831.9  | 6753.7  | 6736.8  | 6660.7  | 6468.4  | 6155.7  | 5735.1  |
| 22.5° | 7043.2  | 7055.9  | 6981.9  | 6861.5  | 6810.7  | 6825.5  | 6817.1  | 6774.8  | 6612.1  | 6324.7  | 5919.0  |
| 25°   | 6937.5  | 6937.5  | 6893.2  | 6791.7  | 6825.5  | 6916.4  | 6918.5  | 6910.1  | 6781.2  | 6531.8  | 6143.0  |
| 27.5° | 6933.3  | 6920.6  | 6869.9  | 6793.8  | 6886.8  | 7026.3  | 7034.7  | 7091.8  | 7011.5  | 6783.3  | 6421.9  |
| 30°   | 7102.4  | 7087.6  | 6979.8  | 6880.5  | 6998.8  | 7148.9  | 7170.0  | 7294.7  | 7254.5  | 7055.9  | 6732.6  |
| 32.5° | 7497.5  | 7444.7  | 7205.9  | 7043.2  | 7132.0  | 7311.6  | 7339.0  | 7537.7  | 7601.1  | 7391.9  | 7032.6  |
| 35°   | 8038.5  | 7871.6  | 7527.1  | 7351.7  | 7360.2  | 7548.2  | 7573.6  | 7865.2  | 8053.3  | 7700.4  | 7265.1  |
| 37.5° | 8784.5  | 8702.0  | 8142.0  | 7672.9  | 7711.0  | 7996.2  | 8070.2  | 8387.2  | 8334.3  | 7869.4  | 7529.2  |
| 40°   | 10420.0 | 10291.1 | 9695.2  | 8573.1  | 8047.0  | 8359.7  | 8382.9  | 8552.0  | 8556.2  | 8251.9  | 8078.7  |
| 42.5° | 12647.3 | 12594.5 | 11966.9 | 10206.6 | 8708.4  | 8602.7  | 8645.0  | 8930.3  | 9249.3  | 9059.2  | 9050.7  |
| 45°   | 15113.4 | 15085.9 | 14420.3 | 12374.7 | 10046.0 | 9399.4  | 9452.2  | 9834.7  | 10445.4 | 10487.7 | 10756.0 |
| 47.5° | 17097.7 | 17085.0 | 16702.5 | 14794.3 | 12093.7 | 10749.7 | 10766.6 | 11172.3 | 12245.8 | 12776.2 | 13205.2 |
| 50°   | 18906.5 | 18967.8 | 18665.6 | 17412.5 | 14883.1 | 12865.0 | 12824.8 | 13095.3 | 14819.7 | 15688.2 | 16220.7 |
| 52.5° | 21421.2 | 21507.9 | 20660.5 | 19855.4 | 17809.8 | 15489.5 | 15457.8 | 15741.0 | 17913.3 | 18564.2 | 18659.3 |
| 55°   | 23642.2 | 23494.2 | 22824.4 | 22591.9 | 21378.9 | 18731.1 | 18722.7 | 18972.0 | 20905.6 | 21182.4 | 21357.8 |
| 57.5° | 24622.7 | 24565.6 | 24888.9 | 25421.4 | 25117.1 | 22562.3 | 22543.3 | 22353.1 | 23583.0 | 23612.6 | 24151.4 |
| 60°   | 25241.8 | 25311.6 | 26302.6 | 27944.6 | 28703.2 | 26685.1 | 26562.6 | 25402.4 | 26139.9 | 26074.4 | 26651.3 |
| 62.5° | 24776.9 | 24914.3 | 26697.8 | 29434.4 | 31386.9 | 30283.8 | 30110.6 | 28196.0 | 28324.9 | 28098.8 | 28635.6 |
| 65°   | 22308.7 | 22522.2 | 25444.7 | 29153.3 | 32718.2 | 33096.5 | 32921.1 | 30662.1 | 30059.9 | 29687.9 | 29390.0 |
| 67.5° | 18114.1 | 18240.9 | 21292.3 | 26708.4 | 32118.1 | 34774.3 | 34738.4 | 32823.9 | 31370.0 | 29419.6 | 27107.8 |
| 69°   | 14969.7 | 15094.4 | 18031.7 | 24134.5 | 30797.3 | 35133.6 | 35203.3 | 33517.0 | 31120.7 | 27788.2 | 24018.3 |
| 70°   | 12679.0 | 12812.2 | 15548.7 | 21928.4 | 29265.3 | 34966.6 | 35091.3 | 33451.5 | 30406.4 | 25899.0 | 21307.1 |
| 72.5° | 6650.1  | 6764.3  | 9572.7  | 15107.1 | 23857.7 | 32107.5 | 32485.8 | 30624.1 | 25774.3 | 18809.3 | 12598.7 |
| 75°   | 2089.9  | 2155.4  | 3738.2  | 7896.9  | 16334.8 | 24965.0 | 25051.6 | 24022.5 | 18302.2 | 10346.1 | 5247.0  |
| 77.5° | 796.7   | 777.6   | 1244.7  | 2909.8  | 8258.3  | 15719.9 | 16250.3 | 15012.0 | 9604.4  | 3657.9  | 1210.8  |
| 80°   | 429.0   | 431.1   | 646.6   | 1204.5  | 3533.2  | 8078.7  | 8526.6  | 7275.6  | 3412.8  | 1141.1  | 278.9   |
| 82.5° | 186.0   | 194.4   | 363.5   | 638.2   | 1622.9  | 2979.6  | 3203.6  | 2666.8  | 1303.8  | 767.1   | 103.5   |
| 85°   | 40.2    | 44.4    | 175.4   | 346.6   | 661.4   | 836.8   | 877.0   | 864.3   | 830.5   | 595.9   | 40.2    |
| 87.5° | 0.0     | 0.0     | 78.2    | 124.7   | 166.9   | 190.2   | 166.9   | 217.7   | 458.6   | 401.5   | 21.1    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



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CATALOG NUMBER: GLEON-SA8D-760-U-T4W-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4515.8  | 4515.8  | 4515.8 | 4515.8 | 4515.8 | 4515.8 | 4515.8 | 4515.8 | 4515.8 | 4515.8 | 4515.8 |
| 2.5°  | 4520.1  | 4482.0  | 4416.5 | 4344.7 | 4294.0 | 4241.1 | 4198.9 | 4179.9 | 4158.7 | 4143.9 | 4162.9 |
| 5°    | 4511.6  | 4437.7  | 4310.9 | 4188.3 | 4099.6 | 4027.7 | 3968.5 | 3945.3 | 3922.0 | 3905.1 | 3903.0 |
| 7.5°  | 4585.6  | 4482.0  | 4287.6 | 4108.0 | 3970.6 | 3873.4 | 3793.1 | 3759.3 | 3731.9 | 3719.2 | 3708.6 |
| 10°   | 4727.2  | 4594.0  | 4334.1 | 4099.6 | 3922.0 | 3757.2 | 3583.9 | 3450.8 | 3364.2 | 3324.0 | 3309.2 |
| 12.5° | 4911.0  | 4744.1  | 4422.9 | 4143.9 | 3886.1 | 3569.1 | 3201.5 | 2884.5 | 2679.5 | 2611.9 | 2571.7 |
| 15°   | 5126.6  | 4919.5  | 4539.1 | 4201.0 | 3755.1 | 3176.1 | 2552.7 | 2138.5 | 1948.3 | 1910.3 | 1868.0 |
| 17.5° | 5333.6  | 5105.4  | 4678.6 | 4211.5 | 3467.7 | 2537.9 | 1870.2 | 1589.1 | 1515.1 | 1540.5 | 1546.8 |
| 20°   | 5515.4  | 5289.3  | 4815.9 | 4118.6 | 2945.8 | 1904.0 | 1447.5 | 1377.8 | 1405.3 | 1453.9 | 1462.3 |
| 22.5° | 5699.2  | 5466.8  | 4942.7 | 3873.4 | 2278.0 | 1445.4 | 1303.8 | 1320.7 | 1348.2 | 1396.8 | 1405.3 |
| 25°   | 5923.2  | 5682.3  | 5061.0 | 3423.3 | 1709.6 | 1229.9 | 1238.3 | 1263.7 | 1291.1 | 1335.5 | 1339.8 |
| 27.5° | 6181.0  | 5954.9  | 5139.2 | 2838.0 | 1267.9 | 1130.5 | 1158.0 | 1196.1 | 1223.5 | 1265.8 | 1274.2 |
| 30°   | 6523.4  | 6314.2  | 5164.6 | 2231.5 | 1062.9 | 1041.8 | 1054.5 | 1101.0 | 1141.1 | 1179.1 | 1185.5 |
| 32.5° | 6844.6  | 6669.2  | 5080.1 | 1684.2 | 984.7  | 959.4  | 959.4  | 986.9  | 1033.3 | 1069.3 | 1077.7 |
| 35°   | 7140.4  | 7026.3  | 4809.6 | 1232.0 | 925.6  | 883.3  | 862.2  | 862.2  | 891.8  | 921.3  | 929.8  |
| 37.5° | 7531.3  | 7527.1  | 4372.1 | 982.6  | 868.5  | 819.9  | 775.5  | 741.7  | 731.2  | 737.5  | 741.7  |
| 40°   | 8201.2  | 8207.6  | 3801.6 | 881.2  | 819.9  | 754.4  | 686.8  | 625.5  | 568.4  | 549.4  | 547.3  |
| 42.5° | 9247.2  | 9152.1  | 3203.6 | 832.6  | 777.6  | 686.8  | 585.3  | 502.9  | 414.2  | 386.7  | 384.6  |
| 45°   | 10908.2 | 10344.0 | 2569.6 | 788.2  | 733.3  | 610.7  | 483.9  | 371.9  | 300.1  | 278.9  | 278.9  |
| 47.5° | 13327.8 | 11909.8 | 1990.6 | 739.6  | 674.1  | 524.1  | 365.6  | 268.4  | 219.8  | 209.2  | 211.3  |
| 50°   | 15829.8 | 13444.0 | 1525.7 | 678.3  | 602.3  | 433.2  | 270.5  | 194.4  | 166.9  | 166.9  | 169.1  |
| 52.5° | 18048.6 | 14568.2 | 1189.7 | 612.8  | 513.5  | 340.2  | 205.0  | 152.1  | 139.5  | 137.4  | 139.5  |
| 55°   | 20125.8 | 15293.0 | 910.8  | 536.7  | 407.8  | 253.6  | 156.4  | 124.7  | 116.2  | 112.0  | 109.9  |
| 57.5° | 22129.1 | 15652.3 | 682.6  | 433.2  | 295.8  | 183.8  | 124.7  | 105.7  | 97.2   | 90.9   | 88.8   |
| 60°   | 23462.5 | 15360.6 | 469.1  | 319.1  | 205.0  | 133.1  | 103.5  | 90.9   | 80.3   | 74.0   | 71.8   |
| 62.5° | 24214.8 | 14564.0 | 302.2  | 230.3  | 145.8  | 99.3   | 82.4   | 76.1   | 61.3   | 54.9   | 54.9   |
| 65°   | 23910.5 | 13249.6 | 211.3  | 164.8  | 105.7  | 74.0   | 61.3   | 61.3   | 44.4   | 35.9   | 33.8   |
| 67.5° | 21188.8 | 11193.5 | 160.6  | 122.6  | 76.1   | 54.9   | 46.5   | 52.8   | 27.5   | 16.9   | 16.9   |
| 69°   | 18230.3 | 9276.8  | 137.4  | 101.4  | 63.4   | 44.4   | 40.2   | 48.6   | 19.0   | 12.7   | 10.6   |
| 70°   | 15844.6 | 8002.6  | 124.7  | 88.8   | 52.8   | 38.0   | 35.9   | 46.5   | 19.0   | 10.6   | 8.5    |
| 72.5° | 9479.7  | 4463.0  | 95.1   | 63.4   | 33.8   | 29.6   | 29.6   | 52.8   | 19.0   | 10.6   | 8.5    |
| 75°   | 3831.2  | 1572.2  | 69.7   | 44.4   | 25.4   | 25.4   | 35.9   | 67.6   | 16.9   | 8.5    | 6.3    |
| 77.5° | 868.5   | 344.4   | 40.2   | 27.5   | 16.9   | 25.4   | 42.3   | 52.8   | 10.6   | 4.2    | 0.0    |
| 80°   | 211.3   | 84.5    | 25.4   | 16.9   | 10.6   | 19.0   | 31.7   | 29.6   | 2.1    | 0.0    | 0.0    |
| 82.5° | 69.7    | 29.6    | 10.6   | 8.5    | 2.1    | 6.3    | 14.8   | 8.5    | 0.0    | 0.0    | 0.0    |
| 85°   | 29.6    | 16.9    | 4.2    | 2.1    | 0.0    | 0.0    | 2.1    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 19.0    | 6.3     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-760-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 5474   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3

S/P: 1.85

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



**Color Vector Graphics**



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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)